

Name: _____ Date: _____
Algebra 2/Trig: Function Notation

DO NOW: (Review)

a) Express in simplest form, along with restrictions: $\frac{\frac{x}{x+2}}{1 - \frac{x}{x+2}}$

A] A **function** is like a rule that takes each _____ value, and assigns to it **one and only one** _____ value. Here are some basic functions...

1) Let $f(x) = x^2$ $f(2) = \underline{\hspace{2cm}}$ $f(3) = \underline{\hspace{2cm}}$ $f(4) = \underline{\hspace{2cm}}$
 $f(5) = \underline{\hspace{2cm}}$ $f(6) = \underline{\hspace{2cm}}$ $f(7) = \underline{\hspace{2cm}}$

2) Let $f(x) = 3x$ $f(2) = \underline{\hspace{2cm}}$ $f(3) = \underline{\hspace{2cm}}$ $f(4) = \underline{\hspace{2cm}}$
 $f(5) = \underline{\hspace{2cm}}$ $f(6) = \underline{\hspace{2cm}}$ $f(7) = \underline{\hspace{2cm}}$

B] So “ $f(x) = 7$ ” is pronounced “**f of x equals seven**”.

C] The $f(x)$ value is another name for the _____ value.

$f(x)$ is another name for “y” $f(x)$ is another name for “y”
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3) Given: $f(x) = x^2 + 3$
 $g(x) = x - 5$

Evaluate each of the following:

a] $f(5)$

b] $f(3)$

c] $f(2)$

d] $g(5)$

e] $g(3)$

f] $g(2)$

g] $f(1) + g(4)$

h] $f(4) - g(0)$

i] $g(8)f(-2)$

j] $\frac{f(6)}{g(6)}$

k] $f(g(7))$

l] $g(f(7))$

m] $(f \circ g)(8)$

n] $(g \circ f)(8)$

o] $f(g(5))$

p] $f(g(x))$

q] $g(f(x))$

4) Given: $f(x) = 2x - 6$
 $g(x) = x^2 + 1$

Evaluate each of the following:

a] $f(7)$

b] $g(10)$

c] $f(3)g(2,384,736)$

d] $f(2) - g(4)$

e] $2g(-3)$

f] $g(-5) + 2f(4)$

g] $f(g(4))$

h] $g(f(-2))$

i] $f(g(-3))$

j] $(g \circ f)(-1)$

k] $(f \circ g)(3)$

l] $(g \circ f)(0)$

m] $f(g(x))$

n] $g(f(x))$

o] $f(g(x+1))$

*****Remember!!!** $(f \circ g)(x)$ means the same thing as $f(g(x))$

5) The accompanying tables define functions f and g .

x	1	2	3	4	5
$f(x)$	3	4	5	6	7

x	3	4	5	6	7
$g(x)$	4	6	8	10	12

What is $(g \circ f)(3)$?

6) If $f(x) = x^2 + 4$ and $g(x) = 2x + 3$, find $f(g(-2))$.

7) If $f(x) = x^2 + 4$ and $g(x) = \sqrt{1-x}$, what is the value of $f(g(-3))$?

8) If $f(x) = 3x + 1$ and $g(x) = x^2 - 1$, find $(f \circ g)(2)$.

9) If $f(x) = \frac{1}{2}x - 3$ and $g(x) = 2x + 5$, what is the value of $(g \circ f)(4)$?

10) If $f(x) = 3x - 5$ and $g(x) = x - 9$, find $f(g(x))$

11) If $f(x) = x^2$ and $g(x) = 2x + 1$, which expression is equivalent to $(f \circ g)(x)$?

12) Which function is *not* one-to-one?

(1) $\{(0,1), (1,2), (2,3), (3,4)\}$

(2) $\{(0,0), (1,1), (2,2), (3,3)\}$

(3) $\{(0,1), (1,0), (2,3), (3,2)\}$

(4) $\{(0,1), (1,0), (2,0), (3,2)\}$

13) What is the domain of the function $f(x) = \sqrt{x - 2} + 3$?

(1) $(-\infty, \infty)$

(3) $[2, \infty)$

(2) $(2, \infty)$

(4) $[3, \infty)$

14) If $f(x) = 2x^2 + 4$ and $g(x) = x - 3$, which number satisfies $f(x) = (f \circ g)(x)$?

(1) $\frac{3}{2}$

(3) 5

(2) $\frac{3}{4}$

(4) 4